

What is claimed is:

1. An apparatus for use in slider fabrication comprising:
at least one fully exposed substrate having an air bearing surface;
5 a plurality of materials exposed on the air bearing surface;
a plurality of etching devices, wherein the plurality of etching devices
comprise a physical etch component and a chemical etch component;
a controller for directing the physical etch component and the chemical etch
component at the air bearing surface, wherein the physical etch component and
10 chemical etch component provides a uniform etch rate throughout the plurality of
materials
2. The apparatus of claim 1, wherein the plurality of materials comprise:
a first portion comprising AlTiC;
15 a second portion comprising transducing materials; and
a third portion comprising alumina.
3. The apparatus of claim 1, wherein the physical etch component comprises a
primary process gas selected from a group comprising of Ar^+ and Xe^+ .
- 20 4. The apparatus of claim 3, wherein the physical etch component further
comprises a high acceleration energy of approximately 100 eV to 5000 eV.
5. The apparatus of claim 1, wherein the chemical etch component comprises a
25 localized flood gas apparatus.
6. The apparatus of claim 1, wherein the chemical etch component comprises a
process gas selected from a group comprising of O_2 , F_2 and XeF_2 .
- 30 7. The apparatus of claim 1, wherein the chemical etch component comprises a
primary process gas selected from a group comprising SF_6 , CF_4 , O_2 .
8. The apparatus of claim 7, wherein the chemical etch component further
comprises a low acceleration energy of approximately 100 eV to 500 eV.
- 35 9. The apparatus of claim 1 further comprising a stage and a carrier, wherein
the plurality of substrates are attached to the carrier and the carrier is attached to the
stage, further wherein the stage is connected to the controller.
- 40 10. The apparatus of claim 9, wherein the physical etch device is a focused ion
beam.
11. The apparatus of claim 10 further comprising a probe attached between the
substrate and the controller.

12. The apparatus of claim 11, wherein the controller monitors a property level of the substrate, the property level selected from a group comprising cleanliness, resistivity, planarity, and pole tip characteristics.
- 5 13. The apparatus of claim 9 further comprising a shutter system including a plurality of shutters, wherein the shutter system is positioned between the chemical and etch device and the substrate, further wherein the shutter system is connected to the controller.
- 10 14. The apparatus of claim 13, wherein the physical etch device is a broad ion beam..
- 15 15. The apparatus of claim 14 further comprising a probe connected between the controller and the substrate.
- 16 16. The apparatus of claim 15, wherein the controller monitors a property level of the substrate, the property level selected from a group comprising cleanliness, resistivity, planarity, and pole tip characteristics.
- 20 17. An apparatus for use in slider fabrication comprising:
at least one fully exposed substrate having an air bearing surface;
a transducing element on the air bearing surface;
a first etching device including a reactant capable of producing a physical
25 etch;
a second etching device including a reactant capable of producing a
chemical etch;
a controller for directing the first and second process gas at the air bearing
surface, wherein the first and second etching device provide a uniform etch rate
throughout the entire air bearing surface.
- 30 18. The apparatus of claim 17, wherein the substrate includes a plurality of materials and the plurality of materials comprise:
a first portion comprising AlTiC;
35 a second portion comprising transducing materials; and
a third portion comprising alumina.
19. The apparatus of claim 17, wherein the physical etch component comprises a primary process gas selected from a group comprising of Ar^+ and Xe^+ .
- 40 20. The apparatus of claim 19, wherein the physical etch component further comprises a high acceleration energy of approximately 100 eV to 5000 eV.
21. The apparatus of claim 17, wherein the chemical etch component comprises
45 a localized flood gas apparatus.

22. The apparatus of claim 17, wherein the chemical etch component comprises a process gas selected from a group comprising of O₂, F₂ and XeF₂.
23. The apparatus of claim 17, wherein the chemical etch component comprises a primary process gas selected from a group comprising SF₆, CF₄, O₂.
24. The apparatus of claim 23, wherein the chemical etch component further comprises a low acceleration energy of approximately 100 eV to 500 eV.
25. The apparatus of claim 17 further comprising a stage and a carrier, wherein the plurality of substrates are attached to the carrier and the carrier is attached to the stage, further wherein the stage is connected to the controller.
26. The apparatus of claim 25, wherein the physical etch device is a focused ion beam.
27. The apparatus of claim 26 further comprising a probe attached between the substrate and the controller.
28. The apparatus of claim 27, wherein the controller monitors a property level of the substrate, the property level selected from a group comprising cleanliness, resistivity, planarity, and pole tip characteristics.
29. The apparatus of claim 25 further comprising a shutter system including a plurality of shutters, wherein the shutter system is positioned between the chemical and etch device and the substrate.
30. The apparatus of claim 29, wherein the shutter system is connected to the controller.
31. The apparatus of claim 30 further comprising a probe connected between the controller and the substrate.
32. The apparatus of claim 31, wherein the controller monitors a property level of the substrate, the property level selected from a group comprising cleanliness, resistivity, planarity, and pole tip characteristics.
33. A method for producing magnetoresistive heads comprising the steps of:
providing at least one fully exposed substrate having an air bearing surface,
wherein the air bearing surface has at least one transducing element;
directing a physical reactant and a chemical reactant at the entire air bearing surface;
monitoring a property level of the at least one transducer until the property level of the transducing element reaches a desired level.